

Applicants : Andrew R. Reading et al.
Serial No. : 09/911,836
Page : 3

The listing of the claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

Please amend claims 72 and 73 as follows:

1. - 18. (Previously cancelled)

19. (Previously Amended) A vehicular gas emission analyzer assembly for traveling with a vehicle, comprising:

a gas analyzer system having at least two analyzer components, one of said analyzer components operating at a particular temperature and another of said analyzer components operating at an elevated temperature that is higher than said particular temperature, said gas analyzer system adapted to measure at least one emission parameter from an internal combustion engine, said at least one emission parameter chosen from (i) concentration of at least one exhaust gas, (ii) mass of at least one exhaust gas, (iii) concentration of exhaust particulate matter; and (iv) mass of exhaust particulate matter; and

a housing for said gas analyzer system, said housing adapted to travel with a vehicle wherein said housing defines at least two internal zones, said at least two internal zones commonly enclosed by said housing, one of said analyzer components being in one of said internal zones and the other of said analyzer components being in another of said internal zones wherein said at least two zones being at different operating temperatures.

20. (Original) The analyzer assembly in claim 19 for calculating the mass of said at least one exhaust gas in grams per each mile driven by the vehicle.

21. (Previously Amended) The analyzer assembly in claim 19 wherein each of said internal zones has a substantially consistent temperature in a direction of the housing and wherein said zones vary in temperature from each other in another direction of the housing.

B2
Cont'd

Applicants : Andrew R. Reading et al.
Serial No. : 09/911,836
Page : 4

22. (Original) The analyzer assembly in claim 19 including a volumetric flow meter adapted to be attached to an exhaust tailpipe of the vehicle and wherein said mass is determined by resolving said measured concentration and volumetric exhaust gas flow measured by said volumetric flow meter.

23. (Original) The analyzer assembly in claim 19 including a probe adapted to withdraw exhaust from a vehicle tailpipe.

24. (Original) The analyzer assembly in claim 23 including a heated line connecting said probe with said housing.

25. (Original) The analyzer assembly in claim 19 wherein said gas analyzer system operates substantially uninfluenced by supplemental cooling.

26. (Original) The analyzer assembly in claim 19 wherein said gas analyzer system operates at a temperature that is at or above the dew point of the vehicle exhaust gas.

27. (Original) The analyzer assembly in claim 26 wherein said gas analyzer system further includes calculating means for compensating said emission parameter for the effect of humidity present in said exhaust gas.

28. (Previously Amended) The analyzer assembly in claim 26 wherein one of said at least two analyzer components comprises a heated device for measuring concentration of hydrocarbon, said heated device at a temperature sufficiently high to reduce the deposit of hydrocarbon materials on said heated device.

B2
cont'd

Applicants : Andrew R. Reading et al.
Serial No. : 09/911,836
Page : 5

29. (Previously Amended) The analyzer assembly in claim 19 wherein one of said at least two analyzer components comprises a heated device for measuring concentration of hydrocarbon, said heated device at a temperature sufficiently high to reduce the deposit of hydrocarbon materials on said heated device.

30. (Original) The analyzer assembly in claim 29 wherein said heated device comprises an infrared-based gas concentration reader.

31. (Original) The analyzer assembly in claim 29 wherein said heated device comprises a flame ionization device.

32. (Original) The analyzer assembly in claim 29 wherein said device for measuring concentration of hydrocarbon is heated to a temperature at or above 60 degrees centigrade.

33. (Original) The analyzer assembly in claim 32 wherein said gas analyzer is adapted to spark-ignition engines.

34. (Original) The analyzer assembly in claim 31 wherein said device for measuring concentration of hydrocarbon is heated to a temperature at or above 175 degrees centigrade.

35. (Original) The analyzer assembly in claim 34 wherein said gas analyzer is adapted to compression-ignition engines.

36. (Previously Amended) The analyzer assembly in claim 19 wherein one of said at least two analyzer components comprises at least one device for measuring NO_x which operates substantially without supplemental cooling of said exhaust gas.

37. (Original) The analyzer assembly in claim 36 wherein said device for measuring NO_x utilizes ultraviolet detection techniques.

B2
cont'd

Applicants : Andrew R. Reading et al.
Serial No. : 09/911,836
Page : 6

38. (Original) The analyzer assembly in claim 36 wherein said device for measuring NO_x utilizes a heated zirconia detector.

39. (Original) The analyzer assembly in claim 36 wherein said device for measuring NO_x utilizes an electrochemical cell.

40. (Previously Amended) The analyzer assembly in claim 19 wherein one of said at least two analyzer components comprises at least one device for measuring NO_x which utilizes ultraviolet detection techniques.

41. (Original) The analyzer assembly in claim 40 wherein said gas analyzer includes an ultraviolet discharge lamp.

42. (Previously Amended) The analyzer assembly in claim 19 wherein one of said at least two analyzer components comprises at least one gas detector to measure the concentration of at least one gas emitted from the engine, at least one pump to draw gas from the engine and at least one gas channel linking between said at least one detector and said at least one pump.

43. (Previously Amended) The analyzer assembly in claim 19 wherein one of said at least two analyzer components is chosen from (i) a non-dispersive infrared analyzer, (ii) a Fourier transform infrared analyzer, (iii) an ultraviolet analyzer, (iv) a mass spectrometer, (v) a mass analyzer comprising an electromechanical oscillator holding a substrate onto which particulate matter can accumulate, and (vi) a mass analyzer comprising a filter substrate onto which particulate matter can accumulate.

44. (Previously Amended) The analyzer assembly in claim 19 including vibration dampening means for reducing vibration of said gas analyzer system.

B2
Cont'd

Applicants : Andrew R. Reading et al.
Serial No. : 09/911,836
Page : 7

45. (Previously Amended) The analyzer assembly in claim 44 wherein said vibration dampening means comprises shock-mounts for said at least two analyzer components.

46. (Original) The analyzer assembly in claim 44 wherein said vibration dampening means comprises shock-mounts for said housing.

47. (Original) The analyzer assembly in claim 44 including another housing supporting said housing, wherein said dampening means comprises spacers between said housing and said another housing.

48. (Original) The analyzer assembly in claim 47 wherein said dampening means further comprises shock-mounts for said another housing.

49. (Previously Amended) The analyzer assembly in claim 44 wherein one of said at least two analyzer components chosen from (i) a non-dispersive infrared analyzer, (ii) a Fourier transform infrared analyzer, (iii) an ultraviolet analyzer, (iv) a mass spectrometer, (v) a mass analyzer comprising an electromechanical oscillator holding a substrate onto which particulate matter can accumulate, and (vi) a mass analyzer comprising a filter substrate onto which particulate matter can accumulate.

50. - 58. (previously cancelled)

59. (Previously Added) The analyzer assembly in claim 19 wherein said at least two internal zones are separated by at least one dividing wall.

60. (Previously Added) The analyzer assembly in claim 19 wherein said at least two internal zones are opened to each other.

61. (Previously Added) The analyzer assembly in claim 19, said housing being substantially moisture impervious in order to be resistant to environmental elements.

B2
Cont'd

Applicants : Andrew R. Reading et al.
Serial No. : 09/911,836
Page : 8

62. (Previously Added) The analyzer assembly in claim 61 wherein said housing is adapted to mounting at an external portion of a vehicle body.

63. (Previously Added) The analyzer assembly in claim 61 wherein said housing has a length and a width, said length and width of said housing defining an aspect ratio, wherein said aspect ratio is greater than or equal to two (2).

64. (Previously Added) The analyzer assembly in claim 61 including a communication channel for communicating data from said at least one gas detector to a system outside of said housing.

65. (Previously Added) The analyzer assembly in claim 64 wherein said communication channel is a wireless communication channel.

66. (Previously Added) The analyzer assembly in claim 61 including vibration dampers to reduce vibration of components defining said gas analyzer system.

67. (Previously Added) The analyzer assembly in claim 61 wherein said gas analyzer system comprises one of a gasoline engine analyzer and a diesel engine analyzer.

68. (Previously Added) The analyzer assembly in claim 61 wherein one of said at least two analyzer components comprises at least one gas analyzer chosen from (i) a non-dispersive infrared analyzer, (ii) a Fourier transform infrared analyzer, (iii) an ultraviolet analyzer, (iv) a mass spectrometer, (v) a mass analyzer comprising an electromechanical oscillator holding a substrate onto which particulate matter can accumulate, and (vi) a mass analyzer comprising a filter substrate onto which particulate matter can accumulate.

B2
Cont'd

Applicants : Andrew R. Reading et al.
Serial No. : 09/911,836
Page : 9

69. (Previously Added) The analyzer assembly in claim 19, said housing having a length and a width, a ratio of said length to said width defining an aspect ratio of said housing, wherein said aspect ratio of said housing is greater than or equal to two (2).

70. (Previously Added) The analyzer assembly in claim 69 wherein said housing is substantially in the form of a cylinder.

71. (Previously Added) The analyzer assembly in claim 70 wherein said housing is substantially in the form a circular cylinder.

B2
Cont'd
72. (Currently Amended) The analyzer assembly in claim 69 including an interface for retrieving measured parameters of a vehicle engine, wherein said measured parameters can be of a vehicle engine are combined with an output of said gas analyzer system.

73. (Currently Amended) The analyzer assembly in claim 72 wherein said measured parameters are combined with said output of said gas analyzer system in a serial data stream.

74. (Previously Added) The analyzer assembly in claim 69 including means for measuring flow rate of the emissions of the vehicle.

75. (Previously Added) The analyzer assembly in claim 74 wherein said means for measuring flow rate comprises a flow meter.

76. (Previously Added) The analyzer assembly in claim 69 wherein said housing has an aerodynamic shape.

77. (Previously Added) The analyzer assembly in claim 69 wherein said housing is substantially moisture impervious in order to be resistant to environmental elements.

Applicants : Andrew R. Reading et al.
Serial No. : 09/911,836
Page : 10

78. (Previously Added) The analyzer assembly in claim 69 wherein one of said at least two analyzer components is chosen from (i) a non-dispersive infrared analyzer, (ii) a Fourier transform infrared analyzer, (iii) an ultraviolet analyzer, (iv) a mass spectrometer, (v) a mass analyzer comprising an electromechanical oscillator holding a substrate onto which particulate matter can accumulate, and (vi) a mass analyzer comprising a filter substrate onto which particulate matter can accumulate.

79. (Previously Added) The analyzer assembly in claim 19 including a communication channel for communicating data from said at least one detector to a system outside of said housing.

80. (Previously Added) The analyzer assembly in claim 79 wherein said communication channel is a wireless communication channel.

81. (Previously Added) The analyzer assembly in claim 19 wherein said housing is adapted to mounting at an external portion of a vehicle body.

B2
end